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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,854	06/14/2007	Sheng Liu	920093.403USPC	4251
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EXAMINER NEALON, WILLIAM				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/591,854

Applicant(s)

LIU ET AL.

Examiner

WILLIAM NEALON

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/CD)
Paper No(s)/Mail Date 16 April 2010, 15 June 2010
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1, 11, 21 and 22 are objected to because of the following informalities: The punctuation in an amended portion of each claim of the form, for example from claim 1 –
a signal distribution unit configured to selectively allocate downlink data frames and uplink wireless signals associated with the subscriber unit;
to the channel processing device of the wireless base station for processing; and
to another wireless base station for processing ; and
will be understood to read as -
a signal distribution unit configured to selectively allocate downlink data frames and uplink wireless signals associated with the subscriber unit to the channel processing device of the wireless base station for processing and to another wireless base station for processing ; and
Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
3. Claims 1 – 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Independent claims 1, 11 and 21 – 24 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Presently being claimed is - a signal distribution unit configured to selectively allocate downlink data frames and uplink

wireless signals. The specification teaches a signal distribution unit that supplies, forwards and switches DL and UL signals [0008-0011, 0025] and Figs. 4a & 4b. Examiner requests the applicant's to identify where in the specification support for the claim language of "selectively allocating" can be found.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 5, 6, 7, 9, 11, 15, 16, 17, 19 and 21 - 24** are rejected under 35 U.S.C.102(b) as being anticipated by Trompower (US Patent No. US 6132306 A), hereafter "**Trompower**".

For **Claim 1**, (Currently Amended) **Trompower** discloses - *A wireless base station comprising: (= wireless base station (210), network controller (220), another wireless base station (215) and SU (230). See abstract, (Col:5, Ln:58-67), (Col:6, Ln:12-22), (Col:6, Ln:60-67) and Figs. 2 & 9 - 12);*

a first communication device configured to receive downlink data frames from a wireless network control device and transmit uplink data frames to the wireless network control device; (= network communications via backbone (250, 1025) with NWK adapter transceiver 1027. See (Col:31, Ln:37-67), (Col:33, Ln:38-51), (Col:34, Ln:8-22, Ln:39-41), (Col:37, Ln:40-41) and Figs. 2 & 9 - 11);

a second communication device configured to transmit downlink wireless signals to a subscriber unit and receive uplink wireless signals from the subscriber unit; (= base/SU radio transceiver (1010, 1035a). See (Col:31, Ln:37-67), (Col:33, Ln:38-51), (Col:34, Ln:10-25, Ln:50-58), (Col:37, Ln:40-41) and Figs. 2 & 9 – 11);

a channel processing device configured to process downlink data frames into downlink wireless signals and process uplink wireless signals into uplink data frames; (= network communications via backbone are processed at (1027a, 1029a, 1031a) with NWK adapter. See (Col:16, Ln:9-40), (Col:34, Ln:8-67), (Col:35, Ln:1-67), (Col:36, Ln:1-67) and Figs. 2, 3b, 3c & 9 – 12.

a signal distribution unit configured to selectively allocate downlink data frames and uplink wireless signals associated with the subscriber unit; (= See Figs. 10 – 12);
to the channel processing device of the wireless base station for processing; and to another wireless base station for processing; (= signal distribution via (1025, 1027, 1029, 1031, 1054). See (Col:34, Ln:10-25) (Col:37, Ln:28-67), (Col:38, Ln:1-67), (Col:39, Ln:1-67), (Col:40, Ln:1-13) and Figs. 10- 14); and

a third communication device configured to communicate with the another wireless base station, wherein the signal distribution unit comprises: (= repeater controller transceiver (1012, 1035b). See (Col:35, Ln:21-31), (Col:36, Ln:48-54) and Figs. 2 & 9 - 12);

a forwarding controller configured to transmit downlink data frames and uplink wireless signals allocated to the another wireless base station for processing to the another wireless base station and receive corresponding downlink wireless signals and uplink data frames from the another wireless base station, through the third communication device. (= processor (1031) and repeater transceiver (1012). See (Col:35, Ln:21-31), (Col:36, Ln:34-37), (Col:37, Ln:28-67), (Col:38, Ln:1-67), (Col:39, Ln:1-67) and (Col:40, Ln:1-13) and Figs. 9 – 11, 13 & 14);

For **Claim 5**, (Currently Amended) **Trompower** discloses - *The wireless base station of claim 1, wherein the forwarding controller is further configured to transmit the uplink wireless signals and downlink data frames to said another wireless base station,*

and receive corresponding downlink wireless signals and uplink data frames from said another wireless base station. (= base station repeater controller transmits/receives and/or forwards packets to/from other wireless base stations. See (Col:37, Ln:38-39), (Col:38, Ln:15-20) and Figs. 11, 13 & 14);

For **Claim 6**, (Currently Amended) **Trompower** discloses - *The wireless base station of claim 5, wherein said uplink wireless signals and said downlink data frames transmitted by the forwarding controller belong to a same physical channel (1029). (= See abstract, (Col:31, Ln:57-62), (Col:37, Ln:38-39), (Col:38, Ln:15-20) and Figs. 9 - 12);*

For **Claim 7**, (Currently Amended) **Trompower** discloses - *The wireless base station of claim 1, wherein the forwarding controller is further configured to exchange control signaling with said another base station. (= See (Col:14, Ln:42-60), (Col:24, Ln:54-61));*

For **Claim 9**, (Currently Amended) **Trompower** discloses - *The wireless base station of claim 1, wherein the another base station is configurable, and said forwarding controler is further configured to perform transmission and reception to and from the configured another base station. (= See abstract and (Col:5, Ln:60-65), (Col:14, Ln:20-40), (Col:35, Ln:21-31), (Col:36, Ln:34-37), (Col:36, Ln:48-54) and Figs. 2 & 9 - 12);*

For **Claim 11**, the analysis used in the rejection of claim 1 applies.

For **Claim 15**, the analysis used in the rejection of claim 5 applies.

For **Claim 16**, the analysis used in the rejection of claim 6 applies.

For **Claim 17**, the analysis used in the rejection of claim 7 applies.

For **Claim 19**, the analysis used in the rejection of claim 9 applies.

For **Claim 21**, (Currently Amended) **Trompower** discloses - *A communication method comprising:*

receiving downlink data frames from the wireless network control device through a first communication device of a wireless station; (260, 1025a, 1027); (= base station receives packet from the network's system backbone. See (Col:37, Ln:40-41) and Figs. 11 & 13);

transmitting uplink data frames to the wireless network control device through the first communication device (1027, 1025a, 260); (= transmit to backbone. See (Col:38, Ln:35-36) and Figs. 11 & 13);

transmitting downlink wireless signals to a subscriber unit through a second communication device (1010, 1035a, 1039a); (= transmit to SU See (Col:37, Ln:40-41) and Figs. 11 & 13);

receiving uplink wireless signals from the subscriber unit through the second communication device of the wireless station; (1010, 1035a, 1037a); (= base station receives packet from an SU. See (Col:37, Ln:35-37) and Figs. 11 & 13);

selectively allocating through a signal distribution unit of the wireless base station, processing of downlink data frames and uplink wireless signals associated with the subscriber unit: to a channel processing device of the wireless base station; and to another wireless base station; (1029, 1031); (= forward packet for processing. See (Col:37, Ln:41-43) and Figs. 11, 13 & 14);

processing the downlink data frames allocated to the channel processing device into downlink wireless signals and processing the uplink wireless signals allocated to the channel processing device into uplink data frames in the channel processing device; (1031, 1054); (= See (Col:37, Ln:41-43) and Figs. 11, 13 & 14);,

wherein the wireless base station further comprising a third communication device for communicating with the another wireless base station, and the method is characterized in that the providing step further comprising:

transmitting the downlink data frames and the uplink wireless signals allocated to the another wireless base station to the another wireless base station through a third

communication device of the wireless base station; (1012, 1035b, 1039b); (= transmit to another wireless base station. See (Col:38, Ln:15-20) and Figs. 11 & 13); and receiving corresponding downlink wireless signals or uplink data frames from the another wireless base station through the third communication device (1012, 1035b, 1039b); (= base station receives packet from another wireless base station. See (Col:37, Ln:38-39) and Figs. 11 & 13);

For **Claim 22**, the analysis used in the rejection of claim 21 applies.

For **Claim 23**, (New) **Trompower** discloses - *The wireless base station of claim 1 wherein the signal distribution unit configured to selectively allocate downlink data frames and uplink wireless signals to a third wireless base station for processing and the forwarding controller is configured to transmit downlink data frames and uplink wireless signals allocated to the third wireless base station for processing to the third wireless base station and receive corresponding downlink wireless signals and uplink data frames from the third wireless base station, through the third communication device. (= See (Col:37, Ln:28-67), (Col:38, Ln:1-67), (Col:39, Ln:1-67) and (Col:40, Ln:1-13) and Figs. 2, 9 & 10 - 14);*

For **Claim 24**, (New) **Trompower** discloses - *The system of claim 11 wherein the signal distribution unit is configured to selectively allocate downlink data frames and uplink wireless signals to additional base stations of the plurality of wireless base stations for processing and the forwarding controller is configured to transmit downlink data frames or uplink wireless signals allocated to the additional base stations to the respective base stations and receive corresponding downlink wireless signals or uplink data frames from the respective base stations, through the third communication device. (= See (Col:37, Ln:28-67), (Col:38, Ln:1-67), (Col:39, Ln:1-67) and (Col:40, Ln:1-13) and Figs. 2, 9 & 10 - 14);*

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (*See MPEP Ch. 2141*)

- a. Determining the scope and contents of the prior art;
 - b. Ascertaining the differences between the prior art and the claims in issue;
 - c. Resolving the level of ordinary skill in the pertinent art; and
 - d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.
7. **Claims 2, 3, 8, 12, 13 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Trompower**, in view of Ogino et al. (US Patent Application Publication No. US 20020032031 A1), hereafter “**Ogino**”.

For **Claim 2**, (Currently Amended) **Trompower** explicitly fails to disclose - *The wireless base station of claim 1, wherein the forwarding controller is further configured to transmit frame timing information relating to the uplink wireless signals or downlink data frames transmitted to said another wireless base station to said another wireless base station.*

However, **Ogino**, in a similar endeavor, teaches a repeater function for relaying signals. One function of the control channel is for indicating a system clock time and a frame format and identifying each channel position. Other control information contains clock supplier Id. (= See abstract, paragraphs [0014, 0016, 0030, 0036, 0067-0068, 0104, 0163] and Fig. 1);

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of **Ogino** with the system of **Trompower** for the advantage of obtaining another resource and approach citing timing and synchronization over a control channel of devices implementing wireless repeating / forwarding functions.

For **Claim 3**, (Currently Amended) **Ogino** discloses - *The wireless base station of claim 2, wherein said frame timing information is the wireless base station local frame timing and the cell system frame timing information.* (= System clock and 'clock supplier' device provide the sync timing. See [0014, 0030, 0036 0068, 0107]);

For **Claim 8**, **Trompower** explicitly fails to disclose - *The wireless base station of claim 7, wherein the control signaling comprises channel processing resource query, allocation control, establishment, modification and release operating commands.* 0036

Ogino, however, recites allocation control, channel reservation and other signaling on the control channel. (= See abstract, paragraphs [0012, 0036, 0030, 0036-0038] and Fig. 3);

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of **Ogino** with the system of **Trompower** for the benefits realized by utilizing a control channel for various signaling events separately from traffic channel information.

For **Claim 12**, the analysis used in the rejection of claim 2 applies.

For **Claim 13**, the analysis used in the rejection of claim 3 applies.

For **Claim 18**, the analysis used in the rejection of claim 8 applies.

8. **Claims 4 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Trompower**, in view of Wallace et al. (US Patent Application Publication No. US 20030174666 A1), hereafter "**Wallace**".

For **Claim 4**, (Currently Amended) **Trompower** explicitly fails to disclose - *The wireless base station of claim 1, characterized in that the forwarding control means is further configured to advance the corresponding transmission by a time amount greater than or equal to the round trip transmission delay between said wireless base station and said another wireless base station, relative to the frame timing relating to the uplink wireless signals or downlink data frames transmitted to said another wireless base station.*

However, **Wallace**, in a similar effort to achieve wireless communication system synchronization, teaches a wireless base station measuring time of arrival of signals from other base stations, determining the timing differences and adjust the base station timing using either a centralized processor or a base station hierarchy. (= See abstract, [0022, 0033, 0044, 0052, 0061, 0063] and Figs. 1 - 6);

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of **Wallace** with the system of **Trompower** for the benefit of further defining the time of arrival delay between base stations as a determining factor for adjusting transmit frame timing.

For **Claim 14**, the analysis used in the rejection of claim 4 applies.

9. **Claims 10 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Trompower**, in view of Hellhake et al. (US Patent Application Publication No. US 20040014494 A1), hereafter "**Hellhake**".

For **Claim 10**, **Trompower** explicitly fails to disclose - *The wireless base station of claim 9, wherein said another wireless base station's configuration is decided by said wireless network control device, or said wireless base station, or said another wireless base station, or a third party wireless base station, or through the negotiation between wireless base stations.*

However, **Hellhake**, in a similar endeavor, teaches a control center that can dynamically reconfigure the access nodes. (= See abstract, paragraphs [0013, 0022, 0027-0028, 0035] and Fig. 5);

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of **Hellhake** with the system of **Trompower** for the benefit of having the ability to configure wireless base stations through a number of methods and sources.

For **Claim 20**, the analysis used in the rejection of claim 10 applies.

Response to Arguments

10. Applicant's arguments filed June 15th, 2010 with respect to claims 1 - 22 have been fully considered but are not persuasive. Claims 1 - 22 have been amended and claims 23 and 24 are new. Applicant's state that no new matter has been introduced. (Remarks, p. 10) The previous objections to claims 6 and 16 have been overcome through amendment and have been withdrawn.

Applicant's contrasted the prior art with the instant invention. Applicant's primary argument is focused on the amendment to the independent claims concerning the signal distribution unit.

Applicant's allege that "there is no discussion in the cited portion of Trompower or elsewhere of anything in a base station "configured to selectively allocate downlink data frames and uplink wireless signals associated with the subscriber unit: to the channel processing device of the wireless base station for processing; and to another wireless base station for processing." as recited in claim 1.

Accordingly, Trompower does not anticipate claim 1 because Trompower does not teach or disclose "a signal distribution unit configured to selectively allocate downlink data

frames and uplink wireless signals associated with the subscriber unit: to the channel processing device of the wireless base station for processing; and to another wireless base station processing," and "a forwarding controller configured to transmit downlink data frames and uplink wireless signals allocated to the another wireless base station for processing to the another wireless base station and receive corresponding downlink wireless signals and uplink data frames from the another wireless base station, through the third communication device," as recited. (Remarks, p. 12 – 13) Examiner respectfully disagrees.

Trompower teaches a cellular communication system in which dedicated repeater controller transceivers are included in base stations and wireless base stations.

(First communication device)

The base stations each include a network adapter transceiver 1027 configured according to conventional network adapter transceiver techniques to allow the base station transceiver to communicate over the system backbone. It is also connected to an internal bus included within the base station transceiver. The base station transceiver further includes a central processor 1031 connected to the bus 1029 for controlling and carrying out the operations of the base station transceiver. See (Col:31, Ln:37-67), (Col:33, Ln:38-51), (Col:34, Ln:8-22, Ln:39-41), (Col:37, Ln:40-41) and Figs. 2 & 9 – 11.

(Second communication device)

Base stations include a base station transceiver 1010 configured to communicate with mobile terminals directly via a first channel. See (Col:31, Ln:37-67), (Col:33, Ln:38-51), (Col:34, Ln:10-25, Ln:50-58), (Col:37, Ln:40-41) and Figs. 2 & 9 – 11.

(Third communication device)

Base stations also include one or more repeater controller transceivers 1012 for carrying out communications between the base stations themselves on a channel other than that used by the mobile terminals. Repeater controller transceivers are configured to perform all other communications, i.e., communications with other base stations, via a second channel, wherein the first channel is different from the second channel. See (Col:31, Ln:37-67), (Col:33, Ln:38-51), (Col:34, Ln:10-25, Ln:50-58), (Col:35, Ln:21-31), (Col:36, Ln:48-54) and Figs. 2 & 9 – 12.

The wireless base stations may be configured to communicate with mobile terminals as well as serve as an intermediate link between other wireless base stations and the network.

(Channel processing device)

As is well known in the art, a basic function of a wireless or cellular base station is to convert digital data to/from RF. The processor arrangements described by Trompower in a number of embodiments disclose this limitation. See (Col:34, Ln:8-67), (Col:35, Ln:1-67), (Col:36, Ln:1-67) and Figs. 9 – 12.

(Signal distribution unit)

Using either the central or multiple processor approach as depicted in Figs. 10 – 12 the signal distribution is disclosed at Figs. 13 & 14 and at (Col:37, Ln:28-67), (Col:38, Ln:1-67), (Col:39, Ln:1-67) and (Col:40, Ln:1-13).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bill Nealon whose telephone number is (571) 270-7795. The examiner can normally be reached on Mon-Thurs from 9:00-6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jinsong Hu can be reached on (571) 272-3965. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available

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through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/WILLIAM NEALON/
Examiner, Art Unit 2617

/LESTER KINCAID/
Supervisory Patent Examiner, Art Unit 2617